WASHINGTON WATER POWER SPOKANE RIVER
UPPER FALLS HYDROLECTRIC DEVELOPMENT,
GATE HOUSE
Spokane River, approx. 0.5 miles northeast
of intersection of Spokane Falls Blvd.
and Post St.
Spokane
Spokane County
Washington

HARE No. WA-162-A

HAER
WASH
32-SPOK,
5A-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Columbia Cascades Support Office
National Park Service
909 First Avenue
Seattle, Washington 98104-1060

HAER
WASH
32-SPOK,
5A-

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Location: Spokane River, ~~ca.~~ approx 0.5 mile northeast of intersection of Spokane Falls Boulevard and Post Street, City of Spokane, Spokane County, Washington

U.S.G.S. 7.5 minute Spokane NW, Washington, quadrangle Universal Transverse Mercator coordinates: 11:468380.5278540

Date of Construction: 1921-1922

Engineer: V.H. Greisser, Chief Engineer, Washington Water Power Company

Builder: Washington Water Power

Present Owner: Washington Water Power
1411 East Mission
P.O. Box 3727
Spokane, WA 99220

Present Use: Water containment and control

Significance: Washington Water Power's (WWP) south channel dam, gate house, gates, and associated lifting mechanisms are the elements which control the flow of water from the south channel of the Spokane River into the penstock. The penstock is the pipe which provides hydraulic force to operate the single vertical shaft turbine-generator unit located in the Upper Falls Power Plant. The gate house structure stands above the Upper Falls south channel dam, gates, and gate lifting mechanisms. The approximately 46 ft. x 14 ft. one-story gate-house building is of constructed of common bond brick. The flat-roofed building is essentially unaltered in its appearance from its completion in 1922. The Upper Falls HED was determined eligible for listing in the National Register of Historic Places in 1988.

Report Prepared by: Robin Bruce
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Western Historical Services
731 Dundee Drive
Post Falls, Idaho 83854

Date: November 1998

I. INTRODUCTION:

The Upper Falls gate house is located in the NE1/4, SW 1/4, Section 18, T25N, R43EWM. The gate house is situated in Riverfront Park, which is the former site of the World Exposition held in Spokane, Washington, in 1974 (hereafter Expo 74). See *Figure 1*, "Sketch Plan of Riverfront Park, (page 8)" which shows the location of the Upper Falls power plant and gate house. The ca. 100 acre park is open all year, and annually attracts thousands of visitors. The Upper Falls gate house is a very important component of the entire Upper Falls HED. The gate house, situated on the south channel of the Spokane River, covers and protects the intake to the penstock that during low water supplies the entire motive power for the Upper Falls HED. As originally conceived, WWP constructed the 10,000 Kw Upper Falls facility principally for residential and industrial use in the city of Spokane, which was and is eastern Washington state's largest city.[1] The Upper Falls HED was declared eligible for listing in the National Register of Historic Places in 1988.[2] As a part of the WWP's present upgrades, there will be visual impacts to the south channel gate house.

II. SETTING OF THE UPPER FALLS GATE HOUSE:

As a result of the development of Riverfront Park, the historic setting for the Upper Falls HED has been strikingly altered from its setting at the time of its construction in 1921-1922. At that time, the area comprising what is now Riverfront Park, was strictly industrial, with railroad yards and depots dominating the area (see *Figure 2*, "Historic drawing of the Upper Falls HED," page 9). Over the years, as federal highway systems linked the country together in an efficient highway grid, and as air transport expanded dramatically, railroads continued to lose customers for their rolling stock.[3] Thus between 1922 (completion of the Upper Falls HED) and 1974 (Expo 74) railroad transportation declined markedly in Spokane as it did elsewhere in the United States.[4] By the 1960s, the site of the future Expo 74 had deteriorated into a mostly abandoned and unsightly collection of obsolete buildings, structures, and objects, most of which were associated with railroad transportation systems.

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[1]L. J. Pospisil, "Upper Falls Development of the Washington Water Power Company in Spokane, Wash.," *Journal of the American Institute of Electrical Engineers*, vol. XLII, no. 11 (1923): 1134.

[2]Leonard Garfield, Architectural Historian, Washington State Office of Archaeology and Historic Preservation, correspondence to the WWP, 29 June 1988.

[3]Donald W. Meinig, "Spokane and the Inland Empire: Historical Geographic Systems and a Sense of Place," in David H. Stratton, ed., *Spokane and the Inland Empire: An Interior Pacific northwest anthology* (Pullman, WA: Washington State University Press, 1991), 23-24.

[4]*Ibid.*

All of the former rails, and most of the railroad associated structures, were removed as a part of the development of Expo 74.

Because of the distance between the Upper Falls HED gate house and power plant (ca. 400 ft.), the buried penstock, and the very different architectural styles of the above-ground structures, the gate house and power plant appear to be distinct and unrelated facilities. In addition, the groomed and landscaped park, with its collection of modern buildings and mature trees and shrubbery, augments the visual detachment of the gate house and power plant (see *Figure 1*, "Sketch Plan of Riverfront Park," page 8). The reinforced concrete power house, which is not visible from the gate house, is of neoclassical design. By contrast, the small (ca. 46 ft. x 14 ft) gate house is of very simple design, and lacks the artistic embellishments of the power plant.

III. DESCRIPTION OF THE UPPER FALLS GATE HOUSE:

The flat-roofed gate house measures ca. 46 ft. x 14 ft. and is of single-wall common bond brick construction. Its main (south facade) faces the forebay to the south (see photographs WA-162-A-1 and WA-162-A-2). The building's function is to cover the three curtain gates and their lifting mechanisms. The gates form the intake to the penstock that supplies the motive power to the single vertical-shaft turbine generator unit in the powerhouse below (see *Figure 1*, "Sketch Plan of Riverfront Park," page 8). The building stands over a poured concrete foundation and consists of only one room.

The primary (south) facade overlooks the forebay. There are no windows on that facade. Three removable steel doors are separated by two concrete columns (see photographs WA-162-A-3 and WA-162-A-4) on the primary facade. The steel doors provide access to the curtain gates for cleaning and repair when they are lifted from their open position. The rear (north) facade of the building has three multi-paned, fixed-opening steel windows (see photographs WA-162-A-4). The rear facade is landscaped with maturing evergreen and deciduous trees and shrubbery that is a part of the landscaping of Riverfront Park.

Entrance to the building is from the east facade. The original fixed-pane transom window and wire and glass pedestrian doorway has been replaced with a simple wood-paneled door and the transom window has been replaced with plywood (see photographs WA-162-A-3 and WA-162-A-5). The structure's pedestrian entrance is protected by 6 ft. high chain-link fencing. There are no window openings on the gate house's west facade. Three pulley-cable lifting systems protrude through an unscreened hatch in the roof of the gate house. Their function is to lift the curtain gates completely out of the water for cleaning, repair, and maintenance. The present pulley-cable lifting system and its steel framework will be removed as a part of the WWP's proposed upgrades.

The gate house exhibits several modest artistic embellishments. A low concrete parapet, with stepped-down corners, caps the structure's flat roof. Below that, a rowlock of bricks provides vertical perspective to the long, narrow structure. A dripstone course of smooth concrete protects the gate house's doorways and window openings. Directly below the dripstone course is fret work in the form of a series of simple horizontally and vertically placed bricks. A belt course of smooth concrete surrounds the building below the window openings (see photograph WA-162-A-2). A rowlock of bricks lie directly below the belt course. A rowlock of bricks with a single row of soldier bricks directly below are also placed at the foundation level of the structure, thus giving an illusion of height to the long, narrow structure.

IV. CONSTRUCTION HISTORY:

Little information has been uncovered that provides construction details for the gate house. The modest structure represented but a fraction of the $1,500,000 total construction cost for the entire Upper Falls HED.[5] Construction cost for the south channel gate house, by contrast, was $2,854.51.[6] No specific mention of construction work on the gate house itself was mentioned in the WWP's daily progress reports; however, that source does indicate that brick fabricated for the project was from clay pits located at Mica, Washington, a village located ca. 14 miles southeast of the construction site on State Highway 27. The daily progress report of 12 February 1921, for example, states that the "Grant Smith crew [was] sent out in [the] evening to load clay at Wash. Brick and Lime pit at Mica (17men)."[7] Similarly, according to the progress report of 15 February 192, 10 men were "loading clay at Mica. Clay deliveries delayed on account of 2 cars being derailed at pit."[8]

The Upper Falls HED, including the south channel gate house, was designed and constructed under the direction of V. H. Greisser, Chief Engineer for the WWP. He was assisted by WWP engineers H. L. Melvin, who directed electrical installations and procedures, and L. J. Pospisil, who directed the mechanical and structural work for the project.[9]Completed in little more than one year, in all, the Upper Falls HED appeared to be a model of construction expediency.

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[5]"Spokane River Producing 14,500 More Horsepower of Electricity," *Spokesman-Review,* 26 June 1922, 4.

[6]The Washington Water Power Company (WWP), "Spokane Upper Falls Station-Costs," n.d., in the Engineering Archives of the WWP, Spokane, WA.

[7]W. A. Hill, "Spokane Upper Falls Development Daily Progress Reports," dated from 3 January 1921 to 8 February 1922, n.p., 12 February 1921, in the Public Relations Vault, File FC1 1.39, WWP, Spokane, WA.

[8]Ibid., n.p. 15 February 1921.

[9]Pospisil, 1140.

V. ALTERATIONS:

Since its completion in 1922, the Upper Falls south channel gate house has experienced only minor alterations to the building's original fenestration or to its general physical appearance. As previously noted, the structure's only pedestrian doorway is not original. The original fixed-pane transom window and wire and glass pedestrian doorway (see photograph WA-162-A-5) has been replaced with a simple wood-paneled door and the transom window has been replaced with plywood (see photograph WA-162-A-3). The most striking visual modification to the building occurred in 1954. At that time, the present pulley-cable gate-lifting mechanism and its steel framework, which protrudes through the roof of the gate house, was installed. This is the system that allows the three curtain gates to be simultaneously lifted entirely out of the water for maintenance and cleaning purposes. Until that time, there were no permanent lifting structures visible above the roof line of the gate house.

As originally designed, one detachabel "A" frame structure opened one gate at a time. Removable covers on the gate house's roof allowed the detachable "A" frame structure to be moved into place for lifting purposes. Following gate-lifing procedures, the "A" frame was removed and the roof covers closed to prevent weather related leakage inside the gate house. This movable system meant that the gates could not be closed quickly or simultaneously in case of an emergency. With the addition of the new system, all three gates could be closed in two or three minutes with no hook-up changes that were characteristic of the original lifting device.[10] As time has proved, however, installation of the present lifting system has provided problems of its own. The open hatch that accommodates the present lifting system exposes the interior of the gate house to weather related leakage. In 1981, for example, the gate motor failed, largely because the gate house roof leaked so badly that moisture rusted the brake and solenoid parts.[11]

As part of its present upgrades, WWP also plans to remove the gate-lifting device that was installed in 1954 with a new gate-lifting mechanism. The present lifting device will be removed and a hydraulic lifting system will replace it. The open hatch on the gate house's roof will be covered and the roof will be completely sealed. This will, in essence, return the appearance of the building to that more closely resembling its visual appearance as originally designed.

In 1969, WWP installed a new electrical trash rack cleaning mechanism (trash rake) to the south facade of the gate house. The cleaning mechanism traverses the length of the trash racks by rails

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[10]N. W. Humphrey, WWP, "Production, Maintenance and Construction [report,]" 26 July 1954, in the Engineering Archives of the WWP, Spokane, WA.

[11][No first name given], Richardson, WWP, "Construction and Maintenance Department [report]," August 1981, in the Engineering Archives of the WWP, Spokane, WA.

attached to the gate house's facade. As a part of the WWP's present upgrades, this structure will be replaced with a new trash rack cleaning mechanism, which is expected to be somewhat larger than the present trash rack cleaning system.

As part of its present upgrades, WWP also plans to remove the gate-lifting device that was installed in 1954 with a new gate-lifting mechanism. The present lifting device will be removed and a hydraulic lifting system will replace it. The open hatch on the gate house's roof will be covered and the roof will be completely sealed. This will, in essence, return the appearance of the building to that more closely resembling its visual appearance as originally designed.

VI. CONCLUSION:

Today, the Upper Falls HED is the only significant industrial property that lies within Riverfront Park. Despite its vastly altered setting and loss of its historical feeling and associations, the Upper Falls HED retains a high degree of integrity regarding engineering and architectural features. It is among the least altered of WWP's six hydroelectric developments on the Spokane River. The Upper Falls HED was determined eligible for listing in the National Register of Historic Places (NRHP) in 1988.[12] The south channel dam structure itself, the two rolling sector gates and four vertical lift gates that comprise the control works for the middle and north channels of the Spokane River, the powerhouse, and its generating and ancillary equipment will not be modified. Thus, only the Upper Falls HED gate house and changes to its appearance are the subject of this Historic American Engineering Record (HAER) documentation.

VII. SOURCES:

Garfield, Leonard. Architectural Historian, Washington State Office of Archaeology and Historic Preservation. Correspondence to the WWP, 29 June 1988.

Hill, W. A. "Spokane Falls Development Daily Progress Reports." Dated from 3 January 1921 to 8 February 1922. In the Public Relations Vault, File FC1 1.39, WWP, Spokane WA.

Humphrey, N. W. (WWP). "Production, Maintenance and Construction [report]," 26 July 1954. In the Engineering Archives of the WWP, Spokane, WA.

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[12]Leonard Garfield, Architectural Historian, Office of Archaeology and Historic Preservation, Olympia, WA, in correspondence to the WWP, 1988.

Pospisil, I. J. "Upper Falls Development of the Washington Water Power Company in Spokane, Wash." *Journal of the American Institute of Electrical Engineers*, vol. XLII, no 11, 1923: 1134-1140.

Richardson, [no first name given (WWP). "Construction and Maintenance Department [report]," August 1981. In the Engineering Archives of the WWP, Spokane, WA.

"Spokane River Producing 14,500 More Horsepower of Electricity," *Spokesman-Review*. 26 June 1922, 4.

The Washington Water Power Company (WWP). "Spokane Upper Falls Station-Costs,"n.d., in the Engineering Archives of the WWP, Spokane, WA.

VIII. PROJECT INFORMATION:

This documentation has been prepared at the request of WWP, which is planning to replace the original gates, gate-lifting mechanisms, and trash rakes with new steel vertical-lift gates, gate-lifting mechanism, trash racks, and trash rake-lifting equipment. These upgrades are essential for the safe and efficient functioning of the south channel containment works. No modifications to any other components of the Upper Falls HED will occur as a part of WWP's present upgrades (as discussed in the first section of this report). These upgrades will involve visual impacts to the Upper Falls south channel gate house.

WWP has volunteered to participate in partial HAER recordation of the gates, gate-lifting mechanisms, and gate house. The partial recordation effort is not a part of Federal review requested under Section 106 of the National Historic Preservation Act of 1966, as amended. WWP proceeded with partial HAER recordation of the Upper Falls HED because of their commitment to preserving a written and photographic record of character-defining features (the gates, gate-lifting mechanism, and gate house) of a NRHP-eligible property that will be altered as a part of their present proposed upgrades to the Upper Falls HED. The south channel Upper Falls gate house is the subject of this partial HAER recordation effort.

Project Manager and Principal Investigator for partial HAER recordation of the Upper Falls HED was Robin Bruce of Western Historical Services, Post Falls, Idaho. Dr. Harvey S. "Pete" Rice of Colfax, Washington, conducted photographic documentation for the project. Documentation provided in the recordation resulted principally from Ms. Bruce's research in various archives of the WWP, Spokane, WA, and other pertinent repositories and sources, field inspection of the Upper Falls gate house and associated structures, and interviews with knowledgeable informants.

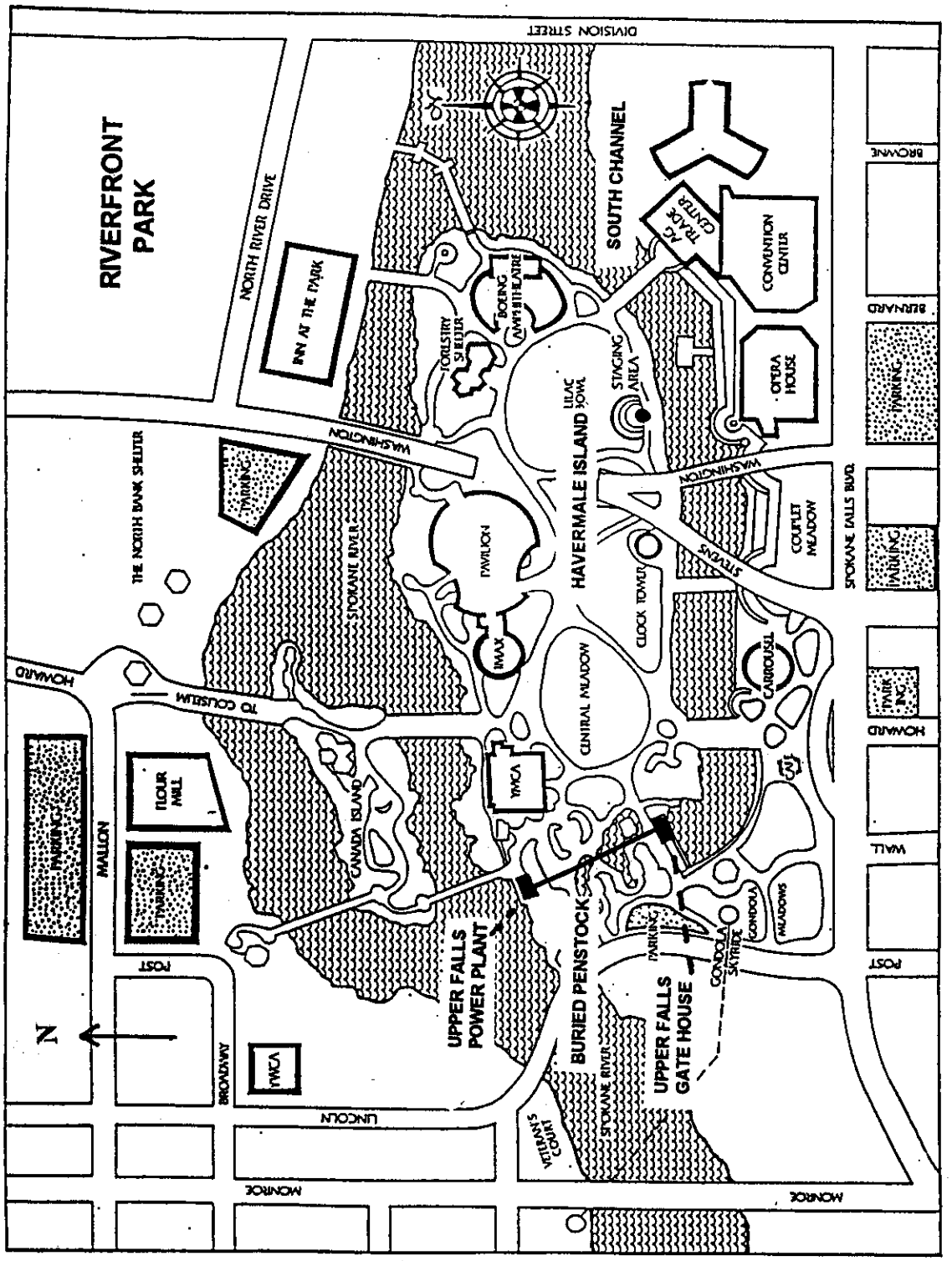

Figure 1, "Sketch Plan of Riverfront Park"

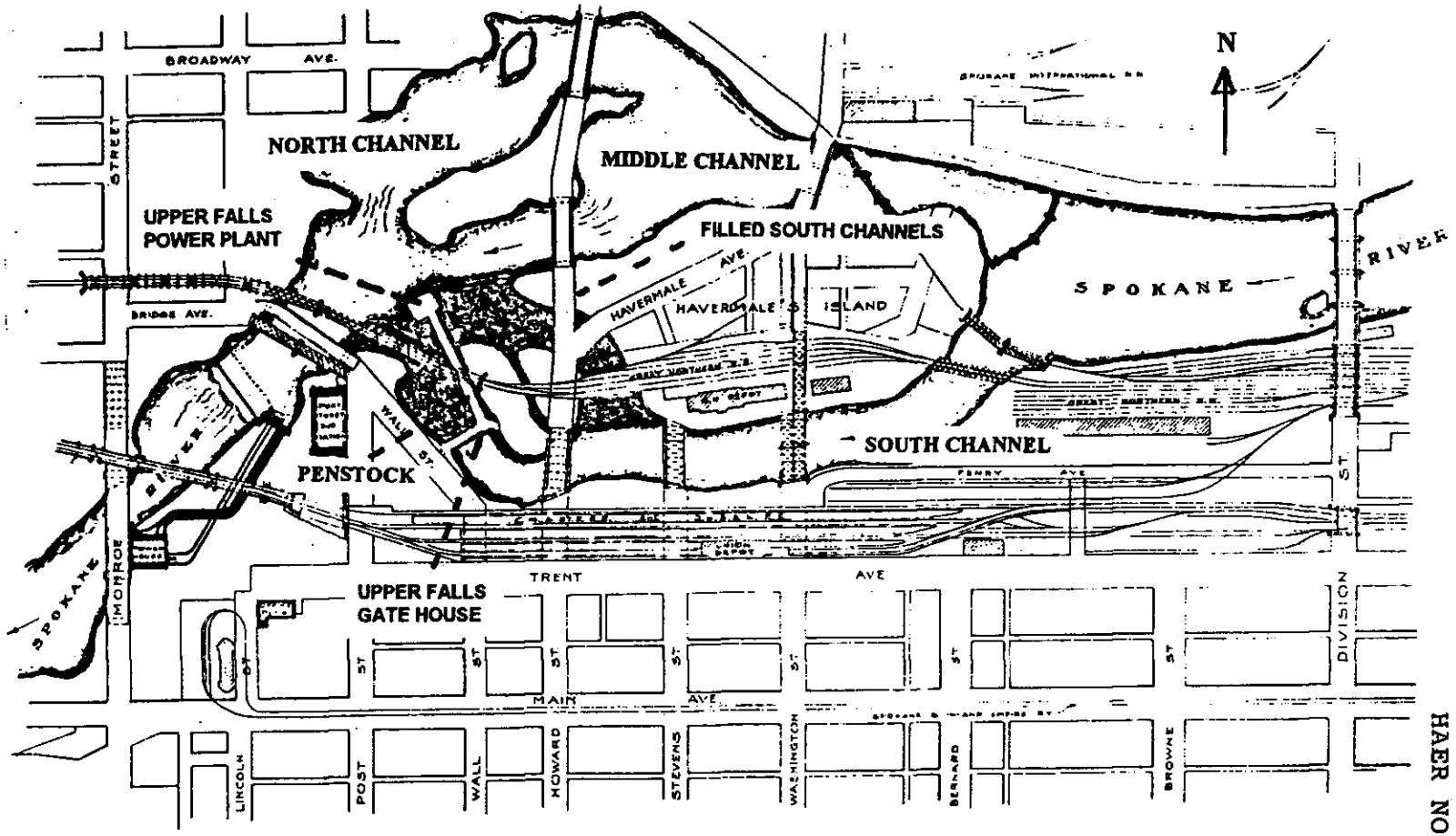

Figure 2, "Historic Drawing of the Upper Falls HED" *

*Adapted from a drawing prepared by Stevens & Coons, Consulting Engineers, Portland, Oregon, 15 September 1921, in a report for the WWP entitled "Report on the Dam and Channel Improvements Upper Spokane Falls Hydro-Electric Development of the Washington Water Power Co." (original report in the Public Relations Archives, WWP, Spokane, WA).

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